PUBLIC HEARING

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	
BUILDING ENERGY EFFICIENCY	)	
STANDARDS, CALIFORNIA CODE OF	)	DOCKET NO:
REGULATIONS, TITLE 24, PART 1	)	02-NFRC-1
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CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET

HEARING ROOM A

SACRAMENTO, CALIFORNIA

WEDNESDAY, NOVEMBER 13, 2002

10:15 A.M.

Reported by:
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ALSO PRESENT

Jim Benney, Director of Education
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I N D E X

P R O C E E D I N G S

10:15 a.m.

PRESIDING MEMBER PERNELL: My name is Commissioner Robert Pernell. I chair the Energy Efficiency Committee. Commissioner Rosenfeld is in a meeting now. He will be down shortly to join us. Also on the dais with me is my Advisor, Rosella, first Advisor I might add, and the boss in some instances.

MS. SHAPIRO: We are not on the record with this.

(Laughter.)

PRESIDING MEMBER PERNELL: This morning the Committee hearing is for the purpose of receiving comments on the rulemaking to update the Commission's energy efficiency standards to reflect the current NFRC rating procedures.

The gentlemen that will be conducting the hearing this morning is Mr. Pennington. And at this time I'd like to turn the hearing over to Bill.

MR. PENNINGTON: Okay, thank you, Commissioner. My name is Bill Pennington. I manage building standards development activities at the Energy Commission. And welcome to this

hearing.

The purpose of this proceeding is to adopt, basically to update the reference for doing window testing certification and labeling to the updated version of NFRC test procedures.

The standards currently are based on existing test procedures that were last updated in 1997 timeframe. And this proceeding is to adopt and to update to the new procedures. And to do so in a timing that is consistent with the timing that NFRC has decided for allowing manufacturers to transition to the new test procedures.

This is actually a fairly routine kind of thing for a adoption authority to do. It's quite common for the reference standards and test procedures that an adoption authority adopts by reference in their standards change. And it's quite common for there to need to be a updating when that happens.

And I guess, as always, there's some consequences to the people that are affected by those test procedures, either positively or negatively. But, in general, this is a quite common activity. And so we're trying to pursue this expeditiously.

The last thing we want to have happen is for there to be some sort of gap in the availability of labels for labeling window products in the field. We think that that would be basically dire consequences to us, given that we're so dependent on labeling and we have adopted labeling procedures to enable our building officials to properly enforce our building standards.

So, we're anxious to update to the new test procedures so that there will be essentially an easy transition here without any gap of labeling in the field.

This is a formal rulemaking proceeding, so we have started a 45-day comment period, and we're about two and a half weeks into that comment period. And this is the Committee hearing that will be held on it. And so we're interested in people's comments.

There are some presentations here that we have planned. And then after those presentations we'll all on people who have given me a blue card. I have four blue cards at this point to get comments.

So, this is being recorded so that we

can have a transcript of the proceeding. So, if you want to speak you need to be recognized and come up either to the lectern or to the table here and speak into the microphones.

All right, so with that, could I have Jim Benney make his presentation.

MR. BENNEY: The majority of this presentation just discusses affects of NFRC 100 and U factor. NFRC also updated 200 and 400, changes at 400 are actually there's none. Changes in 200 are fairly insignificant. So these changes are 1997 -- 100 standards --

And we get the question why does NFRC change the standards, and then I think the overall answer is that we need to make a change for the technical credibility of NFRC standards.

There's really four reasons why NFRC made those changes. The first is to keep up with current technology. As you're aware, let's talk about software first. Computer software has a limited shelf life. In fact, a lot of computer software is obsolete in a year or two.

And NFRC bases their ratings for window performance on computer software. So the advances in just computer modeling since 1997 have been

tremendous, and it's important that NFRC take those into account when we revise the standards. So that's one.

And the other is in changes to the heat transfer calculations. There's been a lot of new technology that's been done, especially through ISO, International Organization of Standardization, and Christian is going to talk about that later. And we use their new heat transfer calculations in NFRC 100.

The second reason we make changes is for harmonization, which as I already said, talked about ISO, international standardization. There's another reason, there's a document out called NAFS, the North American Fenestration Standard. This document was actually a tremendous undertaking between the fenestration industry in the United States and the fenestration industry in Canada to try and standardize the product ratings other than energy performance, it's air, water and structural.

And NFRC saw this work that had been done, and they actually developed one size for rating products for air, water and structural. And they also based in on the metric equation.

So NFRC wanted to dovetail into that action. So NFRC is actually now based on metric sizes and on one size which are the NAFS sizes, or at least most of them are. We think it's good work and we should use it.

The third reason is to remove marketplace confusion. As you know when the NFRC was first started there was no agreement in the industry about what's the right size to use. So we ended up coming up with two sizes, a residential and nonresidential.

Well, between the action of NAFS and the -- itself, they were able to adopt one size and this will really make my job easier and everybody else's jobs, because now there will only be one size on a label, or one rating with one size on the label rather than two.

And then finally the reason for change is NFRC's policy is to have republished documents every four years.

The technical changes from 100 are size changes, then; modeling changes; the rating in skylights; and the application of the new ISO E transfer equation. And we'll get into detail with Christian, again later.

The size changes, and this is just some of them, you can see originally the size changes were based actually on English, so if you look to the right side, a casement was a 24-by-48 residential size.

And when NFRC went to the new sizes, we're now metric, and we're still -- and what we've done is size 24-by-59; it's actually in between what used to be the residential and nonresidential size.

So there's the size change, residential to the current and --

Modeling changes, and I think I'll leave this for Christian to talk about, because it is really in the software. But I did want to note that skylights is a big change. We used to rate them on a vertical basis. Now we're rating them on a slow -- much more accurate rating of how they perform.

ISO5099 is the equation that we're using. And again, Christian will talk about that later. Talk about a lot of the effects that made on the standards. This is the same information that Christian will talk about and how we're doing the transfer calculations now, and how it affects

the rating of windows.

This is a simple chart. There's a lot more of them around. I know NFRC published several documents. They've been on the CEC website. They're available outside on the desk.

This is just a general one that shows the effects of NFRC changes of 100 '97 to 2001. And again, this is residential sizes only from '97.

And so you can see, for example, in the case of the lumen -- casement window, in '97 the U factor rating would have been .48. In the 2001 version that U factor would now be .44.

So, yes, Bill.

MR. PENNINGTON: Do you have information on what a metal frame window without thermal break, what the change would be?

MR. BENNEY: I believe I have a -- do I have a nonthermal broken -- window here?

MR. PENNINGTON: Yes.

MR. BENNEY: Thermal -- slider, that's not thermally broken, that's just an aluminum slider. And in the '97 version you see that -- .61 U factor; under the new 100 would be .52.

MR. PENNINGTON: Okay, thank you.

MR. BENNEY: And actually we have much more data out there on the table And I know, for example, there's other -- has data -- presented. This -- you might be aware that your products are going to change depending on the type of product. This is not, you know, you can't just apply generic numbers here. This is just some of the rating we did just to show possible changes within certain products. But that doesn't mean each manufacturer is going to get these changes. It's going to depend on how their product is designed.

So each manufacturer is going to have to determine what the rating changes are.

Implementation there's again on the table -- yes, I'm sorry, Bill.

MR. PENNINGTON: Also interested in SHGC changes, are you prepared to --

MR. BENNEY: Actually, no --

MR. PENNINGTON: -- speak to that?

MR. BENNEY: -- as I said it's very -- .01, .02 changes -- coefficients between the '97 and 2001 ratings. So that really is not a major impact on the industry.

MR. PENNINGTON: And those are -- the SHGCs would increase or decrease?

MR. BENNEY: Depends.

MR. PENNINGTON: Depends.

MR. BENNEY: Size changes obviously is a major one for -- if you have a larger glass-to-frame ratio and the glass is a higher performing glass then you're going to get a better rating.

It depends on the type of product, because obviously again it's a glass-to-frame ratio issue, are there mullions involved. You know, is it an aborbtance issue within the framing systems, themselves, and how those are calculated.

I don't know if Christian has some -- numbers on him or not.

MR. KOHLER: I don't have numbers, but I can talk about what constitutes changes.

MR. PENNINGTON: We're not picking you up unless you come up.

MR. KOHLER: I'm not going to present numbers, but I can talk about what constitutes the changes, what the effects are.

MR. PENNINGTON: Okay, thanks.

MR. BENNEY: Finally, how are we going to implement these. And as I said, out on the table is actually a full schedule that is available for your use.

But basically how this is going to work is that manufacturers may use the current ratings, okay, and labels until they expire.

Manufacturers may switch to one size label without recertification, but they have to use the 1997 residential size rating and indicate on the label that that's a 1997 rating.

Windows can be submitted for ratings with a new standard this January. However, the ratings cannot be issued until April 1, 2003.

And then finally, April 1, 2004, -- follow up the new rating procedures.

So that's basically how the implementation is going to be. Yes.

MR. PENNINGTON: Sorry to interrupt you again. On the first bullet you say until they expire.

MR. BENNEY: Yes.

MR. PENNINGTON: Can you explain --

MR. BENNEY: Sure, --

MR. PENNINGTON: -- things expire?

MR. BENNEY: -- there's a four-year expiration date on certification products, so if somebody decides they want to go get them certified right now in 2002, they wouldn't have to

get recertified again until 2006. So they could actually have 1997 ratings on their product till 2006.

So there's a four-year certification program. That's pretty standard in most certification issues, a four-year length or term.

MR. PENNINGTON: Thanks.

MR. BENNEY: You're welcome. That's really all I have. As I said, the reason we made the changes is for NFRC to maintain its technical credibility. When there's changes in our understanding of the science, we need to apply those changes in the ratings.

Thank you.

MR. PENNINGTON: Thank you, Jim.

MS. SHAPIRO: I do have one question. Are we going to have this, or is it already available on our website? This slide.

MR. BENNEY: I have a handout I could put out on the table if you would like, or --

MR. PENNINGTON: We will make it available on the website, as well.

MS. SHAPIRO: Thank you.

MR. PENNINGTON: Thank you very much, Jim. Christian Kohler.

MR. KOHLER: Welcome; my name is Christian Kohler; I'm from Lawrence Berkeley National Laboratory. I work with Dariush Arasteh and Steve -- who unfortunately couldn't be here today.

I'm going to talk a little bit about that magical ISO5099 standard that Jim mentioned a couple of times. And mainly how it's incorporated in the software, Window-5 and Therm-5 which is software that Lawrence Berkeley Lab puts out.

First I want to talk about the ISO standard, what the procedures are behind it, exceptions and how it came to be.

Historically the software tools Window-therm frame that were used by NFRC were based on best science as defined by each developer. So there were kind of everybody individually made up what they thought was the best software and the best heat transfer algorithms.

When we started ISO project it basically finalized the standard, which is finalized now is based on best science as we know it today. The previous standards that you saw were in 1997 for NFRC, but the heat transfer really was based on late '80s kind of research. And so it's much

older heat transfer research. The software has been updated in between, but the major overhaul we're doing now is from heat transfer knowledge from the late '80s to 2000, 2001.

These committees are basically that worked on ISO representing national scientists in the field and so it's not just a couple of software developers. It's a worldwide effort.

NFRC has adopted those ISO5099 standards for the -- I should say there's a little bit of confusion. These are called the 2001 standard, even though they're being published now and come into effect next year. So whenever I'm talking 2001, it is actually the new latest thing.

And LBNL has incorporated these changes in the ISO into the software. And we've also participated in the ISO work worldwide.

So the first thing I'm going to talk about, the central glass changes which are in the Window-5 software program. So here's a list of the technical improvements, and I'll elaborate a little bit on each of them, some of them a little bit more. If you have questions please ask me at the ends, and I can -- about a specific one.

The first one is the gas properties and

gas mixes; we've updated that to internationally accepted heat transfer calculations for gas in between the layers, the panes of glass.

The gap convected heat transfer algorithms have improved. If you have a window, the gap between the pieces of glass can be very long and skinny, if you have a very tall window with a narrow gap. Or if you have a small window with a big gap, you have a different aspect ratio. It will never be a square box, but it will be, you know, 20-to-1 or 60-to-1. That's been incorporated now in the software. It used to be one standard number.

The interior surface heat transfer coefficient is now high dependent. We used to have a standard convective interior heat transfer coefficient. Now it -- should change from window to window, which is, again, makes it more accurate.

All these changes are driven by the need to become more accurate. And by improved science.

For the exterior film coefficient we now use the blackbody radiation model, which means there's some temperature dependence in there. And once again, it used to be just a fixed number.

And we modify the solar heat gain calculations for the central glass. And it has to do with whether it's summer or winter U factor used for solar heat gain. That's a very insignificant change, but it's there.

Secondly, I want to talk about the window frame, the edge of the window, which is dealt with in our Therm-5 program. And, again, the technical improvements are we use detailed radiation model on the interior surfaces of the frame and the edge of the glass.

It's both for condensation resistance and U factor modeling, but it actually is very important for condensation resistance. But it also will make the U factors more accurate.

This is one of the bigger changes on the non thermally broken aluminum windows that we'll see in the lists of tables that have been out there.

Where should using actual frame cavity -- - temperatures -- heat flow directions. Once again, it used to be kind of a standard number for a cavity, only depending on the size. And now we do a much more, we take more factors into account.

Frame cavities are component dependent.

The cavities in a frame, for example, in a sill usually are, you know, about this big or whatever, with the gravity pointing down. With jamb you have a long, tall cavity with gravity pointing down, so the aspect ratio is a long skinny one for jamb and a little square one for sill. We used to just have one cavity model, now we differentiate between vertical and horizontal elements.

We've improved the rectangularization of frame cavities. We've worked on the cavity gas mix which is complement to what we just showed about window, the gas mix being improved. Likewise, we're doing it in therm.

There's a thing called slightly ventilated interior and exterior surface cavities, which we do a better job at. And we've improved the modeling of the frame solar heat gain, which mostly will affect windows that aren't able to raise the solar heat gain a little bit for frames. And it's based on the projected area of the frame. It used to be just the -- so it's projected versus -- length.

Again, if you have questions, ask me. I don't want to go into a lot of detail on all of them.

And the convected heat -- was there a question?

MR. PENNINGTON: I'm sorry to interrupt you, I'm interested if, at some point, I'm not sure where the appropriate point would be, maybe it's at the end of your presentation, but if you could explain what are the primary drivers for the U factor change --

MR. KOHLER: Um-hum.

MR. PENNINGTON: -- for metal windows that are not thermally broken?

MR. KOHLER: Sure. I'll just jump back to these slides and I'll pick a couple out.

MR. PENNINGTON: Okay.

MR. KOHLER: Actually, this is an appropriate slide because this is the biggest effect on U factor is this radiation model. And what I'm showing is two typical cross-sections, one of the left and one on the right.

The left one has what we call significant self viewing. There's a lot of frame that actually is protruding out from the line of the glass. So it's sticking in further. So there's a part of the glass that's sees the frame. What we call seeing is radiation exchanges is by

lying on the side. You know, if you put your face in front of a hot plate, or, you know, your stove, you feel it. If you put just a piece of paper in between you don't feel it anymore. So, it's a line of sight thing.

The window on the right is kind of a flush mounted window. There's not much frame that sees the glass. So in these two cases, on your left you would see a significant effect in the U factor, lowering the U factor because of the radiation playing a big effect. On the right you wouldn't see much.

Both of these are actually aluminum products, but like we show, it's dependent on the kind of configuration. The one on the left, of course, is a slider, has a bigger effect than the one on the right.

Yes?

MR. PENNINGTON: So, the one on the right, the radiation is having more of an effect on the conditioned space, is that right, the air in the conditioned space?

MR. KOHLER: Yeah, we assume that the room is always an even 70 F; all sources in the room are at room temperature, 70 F. And that's

the big difference.

On the left we're saying the window's not just seeing the 70 F warm room, but it's seeing parts of the frame which might be only 50 or 60 F.

So the amount of heat transfer over there is less because the temperature difference between the frame and closure, whether it's room or whether it's part of the frame, is less. And so, yeah, on the right it would affect the room, but we always -- we assume the room is what we call a blackbody at 70 degrees. So, yeah, definitely.

So that was my presentation. I just picked this one out. Let's just jump back and see if there's other ones.

The interior surface heat transfer coefficient high dependent can have an effect on tall windows, such as patio doors. For a standard slider it's fairly close to what it used to be. But the taller your product is, the more that is going to have an effect.

That's the main central glass different once. And the gas properties depends on the gap. For gap width we used to use millimeters. It

could be 6 millimeters like a quarter-inch gap; 12 a half-inch gap or three-quarter inch gap.

How it affects actually depends on the gap width. And there's kind of a minimum -- it changes a lot at 6 mm; it changes -- it's kind of neutral at 12 mm; and it goes up a little bit at -- sorry, it goes down a little bit at three-quarters of an inch.

So, it's really hard to get the general trend. It really depends on the configuration. But there's some graphs in the handouts by -- that you have. It's called something like 104 glazing systems compared. And that shows how the gap gas properties and convected heat transfer, those first two actually affect that.

And then, again, the third, the heat -- variation, what I just showed, is the biggest effect, I would say. That point doesn't make much of a difference. And the frame solar heat gain can have an effect on solar heat gain, but not on the U factor. That's I think what you were specifically asking about.

So I would say on the frame and edges, mainly the radiation level, it changed a lot.

This is my contact. Do you have any

questions? Yes.

MR. PENNINGTON: Could you go over what the changes are related to skylights, and do you have an estimate for the magnitude of the likely change related to skylights?

MR. KOHLER: Yeah, I don't have any data -- I'm looking at the data that was actually handed out here. I don't have data prepared here.

There's some data -- basically the skylights we used to rate and test vertically, right now -- rate, test and simulate vertically, I should say, now we actually, we simulate under 20 degrees slope and we actually rate them on a 20 degrees slope. Testing is still done vertically to match up testing the simulation. So, it's one simulated vertically.

Under 20 degrees you actually have a whole different heat transfer issue, because normally it's again, it's a gravity thing. If your skylight is tilted, you know, you get a stratification right under it. And in a vertical window it's a whole different world.

So the numbers are going up. Some of the numbers I'm seeing here are the U value from a 5-4 to a 6-3. That's quite a bit higher for the

skylights. But, it is a more accurate rating. And it's the skylight manufacturers within NFRC were actually happy to get a more accurate rating, even though their numbers goes up.

And traditionally numbers go down, everything's good; numbers go up, there's problems. But everybody agreed that this is a more reasonable way. And these skylights are never mounted vertically or it wouldn't be a skylight.

But they go up, and the only numbers I have right here are from that.

MR. PENNINGTON: What about SHGC for skylights?

MR. KOHLER: That shouldn't change too much. There's like what I'm seeing here is a 4 or 5 percent, which is kind of in the range of what the other windows -- this is an aluminum one, for example, with a drop, as well.

The SHGC is partially determined by the U factor of the window, the frame and center of glass. So a big change in U factor will result in a second order change in solar heat gain. But it's much less.

MR. PENNINGTON: It would seem to be

that if you changed the tilt from vertical to a tilt, that the window's going to see more solar.

MR. KOHLER: Oh, well, that's a good point. There's this -- the sun has to know about NFRC. The sun always is supposed to shine perpendicular to the glass. That's for vertical glass and that's for skylights.

And we know that for a vertical window the sun hardly ever hits it horizontally, you know, dead on. But that's the way all the calculations are done in the ratings. So that's why I'm saying the sun has to know about NFRC, it has to be in that position.

So for skylights it's actually more realistic because at a slope you'll actually -- you're right, I mean in the real world, in the nonrating world, you would actually see a bigger difference.

But it's very hard to do sun, because then you also have to determine, you know, are you taking June 15th at noon; or, you know, are you taking June 16th. You know, so all the properties are perpendicular incidents.

MR. PENNINGTON: Okay, so that tilt didn't change the SHGC --

MR. KOHLER: Not in that, no, it's mostly second order effect because the U factor changed.

MR. PENNINGTON: Okay.

MR. KOHLER: Not for any of that. But, yeah, that's a good point. I should have pointed that out. It's -- you live long enough in that world, you think of course the sun hits every window perpendicular, but I guess it doesn't.

MR. PENNINGTON: Do you have any questions? Does anyone have any questions to clarify what was said, either what Mr. Benney said or what Christian said?

Okay.

MR. KOHLER: Thank you.

MR. PENNINGTON: All right, I'd like to turn to the public comments. Ray Bjerrum.

MR. BJERRUM: My name is Ray Bjerrum with Merzon Industries. I'd like to make a couple comments. I have submitted a written document that I won't read, but I think you have that --

MS. SHAPIRO: We have that.

MR. BJERRUM: If anybody wants a copy of it that didn't get it, I have copies here.

One of the things I'd like to say is

that I would hope that the NFRC didn't go to one size to make Jim Benney's job easier.

As you would know, and people that have been around a long time, know that I was here standing here many years ago supporting the NFRC procedures. And it split the California window industry in about half between the aluminum people that felt they were being unfairly treated, and people that were supporting NFRC procedures.

In fact, I was the chairman of the original certification policy committee and it was the State of California that pushed the NFRC into certification. In fact, they didn't want to do certification until the state asked them to do that.

And I believed in the good science at the time. Now I'm told that the computer programs change and that the new computer programs have to be updated. Well, physics don't change. Maybe the computer programs change, but physics don't change.

Early on we had a testing procedure only, and there was a company in Fresno that only tested and got a 7.5 on a window that was supposedly, as we thought, simulated to about an

8.2.

I launched a challenge, Merzon launched a challenge against Western Products that went through the challenge procedure at SCWM and then on to NFRC. Unfortunately, it got into a large legal battle, and NFRC and Merzon received a letter from an inside-the-Beltway lawfirm that threatened that Ray Bjerrum, with all his friends in NFRC and CEC, was trying to put this poor company out of business in Fresno.

Now I am just finding out in the last six months that the number was probably correct. That by testing the 7.5 will now be -- that 8.2 will probably be a 7.5, and for all these years I've been out there thinking this process was great and felt that I've been injured over it. And our company was injured. And a lot of the aluminum people were injured over the last ten years.

And I'd also like to point out to the Commission that what I said in here is there's a certain amount of unfairness here to the large size structural windows of which even the Energy Commission has Blomberg windows here.

When you go into larger size and you are

really taking a 5030 size that is the U value 5030, when you have that glassed area square footage that the larger windows that are structurally stronger, that U value should have been changed.

And if NFRC was really looking toward the future they would allow some sort of a certification process that would give the actual U value per that window.

And that's about the points I want to make.

MR. PENNINGTON: Question, Ray?

MR. BJERRUM: Yes.

MR. PENNINGTON: Do you think it's inappropriate to change to these new test procedures?

MR. BJERRUM: You see we're in a conundrum here because if you're still making aluminum windows you'd like to get this good number. So, my point is it costs money, as you saw in there, to make this change. It does affect people, and that expense should be borne by somebody because Merzon has to retest all four. And in our position we'd have to immediately get to Ken Nittler and say, how fast can you simulate

them.

And then put that number out on the street for people to use because obviously it's going to be more favorable. So I don't -- what I'm saying is that in the last ten years there's been people wronged, and I can't say that this right or wrong because I'm not a technical person.

But if it is right then I'd like to use it.

MR. PENNINGTON: As a member of NFRC, as a manufacturing member, is it your expectation that periodically the test procedures will be reconsidered and that there would need to be some updating of ratings based on what the organization decides is an appropriate change?

MR. BJERRUM: You know I sat here ten years ago and said solar heat gain was a big issue. That California was a dominant in air conditioning cycle. And I was told the science isn't there. We've got to do U values.

And I always said that we've got to do this, and there was no science for the solar heat gain. But we'll get there some day, Ray. And so it was unfavorable even though I supported the NFRC process, they said the science wasn't there.

And now we're finding that this was really modeled wrong and that maybe some of the test chambers were giving the proper information. So, updating, yes, but I can't believe that we're going to change the physical properties of highly conductive products by this amount. Either it had to be an error ten years ago, this is not a minor change.

MR. PENNINGTON: Question?

PRESIDING MEMBER PERNELL: I have no questions.

MR. PENNINGTON: I'm wondering, Christian or Jim, or anyone else in the audience, I don't know if Ken -- is there an error that's being discovered here that's being changed?

MR. KOHLER: Yeah, I'd like to comment briefly on that, and --

PRESIDING MEMBER PERNELL: Christian, could you state your name for the record.

MR. KOHLER: Sorry, Christian Kohler, Lawrence Berkeley Lab. I just gave a presentation on the changes.

Physics doesn't change, but understanding of physics does change. I think the very fact that there is Nobel prizes for physics

every year means that something is changing, new things are discovered.

Partially there's a thing with faster computers, as everybody's aware of, allow calculations to be done, more complex calculations to be done more accurately. I mean there's in the whole building arena is the same thing where simulations get more accurate because now they can take more computer time.

Another thing I'd like to say about the test and simulation numbers, traditionally, for, for example, aluminum windows the test numbers have been lower than the simulation numbers.

And we've done some round-robins in the past, and looking at the numbers here, for example, the 99 test round-robin that NFRC did was an aluminum horizontal slider which was tested at a .57, and simulated at a .62, which is about a 7 percent, almost 8 percent difference. So, testing was lower; simulation was higher.

Now we're kind of switching it around a little bit. We're still hovering around that perfect point, but now the simulations are a little bit lower than the testing.

The test numbers will also change a

little bit because testing always uses the film coefficients of the simulation. We did it in the past, now you saw my presentation, there's a few things that change the film coefficient. That is also going to affect the test numbers. So it's not that testing stays the same, because physics stays the same. We actually always adjusted some of the test parameters.

So, I think that's my point about what happened to the aluminum windows and why that change was there. And so was it wrong? It was the best science as known in the late '80s when these procedures were done. Now we're further and we have, like I said, an international panel that worked on these. And we agreed on more complex calculations which get more accurate results. So, thank you.

MR. PENNINGTON: Charlie Macher. I'm sorry, Charlie, how do you pronounce your last name?

MR. MACHER: Macher.

MR. PENNINGTON: Macher, thanks.

MR. MACHER: Charlie Macher with Blomberg Window Systems. To say that Blombergs and the Energy Commission has been adversarial in

the past is probably a bit of an understatement.

We believe now as we believed ten years ago that we were probably behind the eight ball as far as the regulations were concerned, and as far as NFRC's regulating process was concerned.

We still believe we are at that point. Our windows continue to be tested at lower values than they are simulated at. However, we can't use the tested values, we use the simulated values on our labels.

I don't know what the end is to this. I understand that science continues to move on and improve itself. However, I do feel that we have been wronged in the past, and there should be some consideration for that in how the Energy Commission considers NFRC's procedures in the future.

And I think that's all I have to say right now.

MS. SHAPIRO: Charlie, could you -- I don't know what you mean, that we should consider that in the future.

MR. MACHER: In the past you have used NFRC's simulation values as a target number possibly for your regulations. Well, now that

these values are going to drop considerably, and in some cases, and even in the literature that NFRC published, there's a 25 percent spread from what they were in '97.

I don't know that the targets should be lowered in your budgets to that 25 percent. We have been hurt in the past because they were off on the other end by as much as 25 percent. Now if you drop them, we may not be -- we still may continue to be behind the eight ball.

MR. PENNINGTON: A comment on that. In this rulemaking proceeding that we're in right now we don't intend to change the U factors or SHGCs that are in the package requirements in the standards.

MR. MACHER: In the budget? In the prescriptive packages?

MR. PENNINGTON: That the budget is based on. We don't intend to do that in this proceeding.

We are planning in the 2005 standards proceeding, which is also ongoing, to consider whether we should do that.

MR. MACHER: The other thing that happens in your process is that there are default

tables. And the default tables were bordering on a punitive stages for our products. And I would urge that you consider adjusting them to a more real scientific area than they are right now.

PRESIDING MEMBER PERNELL: Which one is that? I'm sorry?

MR. MACHER: The default tables for U value and solar heat gain, and the products that they contain.

PRESIDING MEMBER PERNELL: On the issue of tested value versus simulated value, what is the industry standard? I mean which one do we use?

MR. MACHER: We use the simulated value on our labels. The tested value is merely a way of assuring that the simulated values are approximate --

PRESIDING MEMBER PERNELL: Or close.

MR. MACHER: -- or correct, and now that we find that they may have been correct ten years ago, but they're not correct now, so I don't know where the line should be drawn.

MR. PENNINGTON: I wonder if, maybe, Jim, you could explain the relationship of tested and simulated values? How they work and how one

is a check on the other and --

MR. BENNEY: Jim Benney, NFRC. In the beginning NFRC required two thermal tests to validate simulated ratings. In 1992 there was concern over whether or not the computer software was accurate, quote-unquote accurate.

And so they actually required two thermal tests, a large product and a small product. And then they were simulated, and they had to be within a certain range to validate the rating on the software.

Now, and actually over time, we've seen that the software is valid. So we've dropped that down to one test now. And there's actually been action in the NFRC to drop validation testing because everybody, I think, believes that software is more -- accuracy is a tough term.

Software is more equitable. It's easier to get standard ratings over and over and over again with software because you're plugging in numbers and giving out with an output. Whereas in a thermal test chamber you have various -- we have variables that will affect how the window tests. And that not only depends on the lab personnel, but on the test chamber, itself.

So, you know, accuracy -- NFRC wants to develop standardized, fair, uniform and accurate, but it's standardized ratings so you compare product to product. And right now we still are requiring that simulations be validated by a thermal test, because it's more of a quality control check. We want to make sure that manufacturers are building the windows as shown in the drawings. That's how it works.

MR. PENNINGTON: So you have a tolerance between the tested value and the simulation?

MR. BENNEY: It is plus or minus 10 percent, or .04 of a U factor.

MR. PENNINGTON: And what would happen if the tolerance was exceeded?

MR. BENNEY: Then the simulation was not validated, and you couldn't use the simulated rating.

MR. PENNINGTON: So you had to go back and re-do the simulation?

MR. BENNEY: You had to either -- well, typically what they did is they'd go in and, you know, we had experts that would check the test and check the simulations. See what the problem was, why it didn't validate.

MR. PENNINGTON: So there is, you know, Ray brought up a point of a contended situation where there was a fairly significant difference between the test value and the simulation value.

MR. BENNEY: Yes.

MR. PENNINGTON: That was resolved by adjusting the simulation value or re-doing the simulation --

MR. BENNEY: I'm not actually sure how that was resolved.

MR. BJERRUM: I --

MS. SHAPIRO: Up to the mike, Ray. Could you say it on the mike, please.

MR. BJERRUM: I'll offer an opinion. There was an AAMA test called 1503 that had a way of testing a product with 15 mile per hour perpendicular wind. Some test chambers. There was a lot of bad feelings about how people reported U values, but the 1503 was basically you blow the wind at it at zero degrees and 68 on the other size, and then you got watts-in/watts-out, and that was the test. It was fairly simplistic.

The NFRC's test came up with some area weighted averages. And so there's even a debate today as to whether U-sub-S, which is pretty much

like a 1503 test, and the NFRC has changed it. And I understand they're even changing the physical tests again --

MR. PENNINGTON: So, Ray, I had a specific question.

MR. BJERRUM: Yeah.

MR. PENNINGTON: Related to this issue that you had raised earlier about there being a discrepancy in this one scenario between the testing and the simulation, was that resolved by the simulation being adjusted ultimately? That was my question.

MR. BJERRUM: No, if you remember back it was always when people complained you said, well, you could test everything. And that was always here in the naive when we were taking this testimony. It could always test. That was always the out.

But generally people felt that the physical tests were not reliable and repeatable.

MR. PENNINGTON: Um-hum.

MR. BJERRUM: So, my only point when I said that is that when I made the challenge I felt that the test was way off. The test chamber was owned by Mike Hodgson. And people discredited

that chamber. And by all rights, that window today would probably be a 7.5 if simulated.

So all I'm saying is whatever you came up with in 1993 was now going to be correct. But there will still be a debate as to whether test chambers are repeatable because the NFRC has changed many different ways of stripping film coefficient off and going back to try to get it within 10 percent.

MR. PENNINGTON: Okay, so you agree with Jim's comment earlier then, one of the problems with actual testing is the lack of repeatability, the difficulty to get it to be repeatable?

MR. BJERRUM: I have no problem. That's why I supported NFRC procedure was that the simulation was more repeatable and it was true science, and I don't have any problem with it. I lived with that for ten years and believed in it.

MR. PENNINGTON: Okay, thanks.

MR. BJERRUM: Does that answer your question?

MR. PENNINGTON: Yes, it does. Charlie, I wanted to ask you, does your company support the change to the new test procedures?

MR. MACHER: Obviously the new test

procedures appear to bring U values down and we would support that, because U values have been elevated over the last ten years. And we've probably lost business unable to comply with certain jobs and not been able to -- and they have not been able to use our products on those jobs.

So, between a rock and a hard spot, basically, in that I didn't like the old procedures. The new procedures are more favorable, and I still don't know how accurate they are.

Now the other thing is that the Btu over the last millennium hasn't changed much. And so we should consider the Btus and not the rating process.

MR. PENNINGTON: Okay. Marvin Stover.

MR. STOVER: Marvin Stover from Mikron Industries. We've been involved in this process with NFRC from the onset. You know, we're a supplier to the window industry.

I read a quote from Jennifer Unlimited this morning. It said, "Every time I close the door on reality it comes through the windows." So I thought that was appropriate today.

(Laughter.)

MR. STOVER: You know, I think I submitted that. I hope you have my paper. If you do then I won't go through and read all of this. You know, it does sound like that I'm not in favor of the changes. I actually am in favor. I would like to see if the Commission would consider a delay until some things can be worked out to make me feel more comfortable with the changes.

One, you know, if the costs had been looked at and studied and there is no incremental costs or any life cycle costs or annual energy performance differences with the new NFRC procedures, then I'm in favor of that, if that's been looked at.

The other issue that I have that I've noted on my second page is about the labeling. You know, the labeling issue that's proposed, we believe, could cause some problems in the code officials, homeowners, builders, when they look at these, when you have an old label with old values, you have new labels with old values and new labels with new values. That could create some kind of a confusion.

And my recommendation today is that the CEC hold off until NFRC can come back, in fact

push NFRC to come back with a little better labeling transition so that the code officials do not get confused in the field, homeowners don't get confused, and builders don't get confused.

You know, we went through a transition in '97 that was somewhat confusing. And I'd like to see if we can resolve some of those issues so we can avoid those pitfalls.

So that's all I've got to say.

PRESIDING MEMBER PERNELL: Do you have any recommendations?

MR. STOVER: Pardon?

PRESIDING MEMBER PERNELL: Do you have any recommendations for the labeling transition?

MR. STOVER: Well, I think there may be something that we could say, if you put it out there far enough and you say to the manufacturers, okay, you know, here's the timeframe out into the future. And I don't know what that would be. Maybe 18 months. And says, okay, here's the cutoff point. And all the old labels disappear and all the new labels suddenly appear.

Right now the transition can occur for up to four years. You're going to see old labels and new labels for at least a period of -- well,

possibly a period of four years.

And if we could come up with a transition plan that the manufacturers could accept that says okay, out in the future this is the cutoff period. You can use old labels up until this point, and then it's new labels are now in and the old labels are out.

PRESIDING MEMBER PERNELL: Mr. Pennington, is that correct? The transition period is four years?

MR. PENNINGTON: That was something that was talked about early on. The way that -- my understanding of the way that the NFRC process works is that once you get tested under a test procedure, that result is good for four years.

And so if someone tests right now today under the old procedures then that value would be valid for four years. And then at that point it would expire and they'd have to test under the new procedure.

And so the worst case situation it seems to me in terms of this overlap would be if somebody went and tested their window products the day before they're obligated to use only the new test procedure, and they used the old test

procedure, then they would -- it would be valid for them for four years to use those results under the old test procedure.

MS. SHAPIRO: It's very similar to how our appliance standards work, that after a certain date you can no longer sell an appliance that's been manufactured after that date. You can keep on selling the old appliances if they were manufactured before the date certain.

But, in our appliance standards we have an overlap like that, too.

MR. PENNINGTON: We called that inventory clearance.

MS. SHAPIRO: Right.

MR. PENNINGTON: And the date of manufacture is the controlling point. And if you manufactured them the day before that, you can sell them until you --

MS. SHAPIRO: Until you don't have any more.

MR. PENNINGTON: -- until you don't have any more, yeah.

PRESIDING MEMBER PERNELL: Okay. And one of your recommendations was a extension of the proceedings, and now I'm hearing that there's a

four-year transition period. So I'm trying to understand what's the benefit of, you know, extending this proceeding.

MR. STOVER: Well, it really is to see if we can -- you know, and I'm actually asking the Commission to push NFRC into maybe a little better defined labeling transition time. So that you don't get this overlap and confusion.

I think it's going to be confusing. That's just my opinion. People that I've talked to said, yeah, it's going to be an issue when the labels hit the field. You know, the code officials are going to say, okay, is this old value, new value, old label, new label. And, you know, what am I looking at, and what value does that represent.

MR. PENNINGTON: So, could you stay there? I'd like to hear from NFRC related to this. What options were considered by NFRC for this? Was the option of doing something like Marvin is suggesting proposed? And what was the organization's reaction to that?

MS. SHAPIRO: And, Bill, also Ray seems to want to say something, too.

MR. PENNINGTON: Okay, sorry, Ray.

MS. SHAPIRO: Did you want to still speak, Ray?

MR. NITTLER: I'm not NFRC. I'm Ken Nittler. I'm a member of NFRC and I go to all these meetings. And NFRC Staff may want to comment on it, but I can't resist on this one.

On the labeling issue, I don't share what Mr. Stover is saying here. What we're asking for, to the average building official, let's put it this way, to the builder, they're going to buy a product and it's going to have a rating on it.

They don't really care whether it's the old one or the new one. They need a product that's labeled that meets the compliance documentation. I just can't picture that few, if any, if ever somebody's going to ask, oh, my goodness, is this the new label or the old label. They need a product that meets their compliance documentation.

And if anything, under the new procedures, more products are likely to meet whatever compliance level because generally speaking the numbers are getting a little bit more favorable.

So, I don't think on the streets it's

going to be much of an issue.

Now, within NFRC, I'll put it this way, transition is painful. Okay. NFRC is a national organization made up of volunteer members, window manufacturers from all over the country, government, laboratories, all sorts of people.

And the transition periods we set -- one of the difficulties NFRC faces is we're trying to administer this program nationally. And in some marketplaces the manufacturer will find that the product they came in for a rating, that that four-year certification period serves their business needs just fine.

And so NFRC has said, and it was well debated, that that's fine, you can continue to use that certification period since that's what program was in place at the time that you did the ratings.

Now, there's another whole class of manufacturers, and I believe most of the California window suppliers will fit into this, that will find that the new ratings are favorable enough that they'll want to move towards recertifying to the new values relatively sooner. And when they do that, the rules in NFRC for

labeling require them to use the new label.

So I think, as a practical matter, what's going to happen within a year or some kind of timeframe like that, two years, you'll find the vast majority of products are going to be labeled under the new program.

There might be an occasional one under the old program, but I don't think it really causes much of a compliance problem, as a practical matter.

PRESIDING MEMBER PERNELL: So you're saying from a business standpoint in some instances it would be effective for a manufacturer or a company to get their product retested?

MR. NITTLER: Right. I think, as Mr. Macher and Mr. Bjerrum are saying, and they're going to be faced with a decision in the very near future here, do they continue to use the four-year certification period they already are entitled to, or will market conditions here in California move them towards getting the new ratings.

And each manufacturer, depending on what type of product they make, is going to have to make some sort of business decision.

And so, I mean, I'm in favor of giving

full value for any of the ratings that are out there. Let's give the manufacturers maximum flexibility. They can use the old ones, they can use the new ones. And that's sort of what's on the table, or the way it's been proposed, allows the maximum flexibility in meeting the requirements.

PRESIDING MEMBER PERNELL: Up until four years?

MR. NITTLER: Right.

PRESIDING MEMBER PERNELL: Okay.

MR. PENNINGTON: I guess another way I'm hearing this is that some manufacturers may choose to not retest and they may choose to use the values they got under the previous test procedures for the full term that they were authorized to use them.

And to do what you suggest that we do and have a date specific after which they no longer could use that, would actually impose a cost on those businesses otherwise. That they would have to retest faster and so -- I mean those are the people that would be negatively impacted by what you propose.

MR. STOVER: Um-hum.

MR. PENNINGTON: And otherwise, people who had chosen to move to the new test would be doing that based on a business decision. And so there wouldn't be any consequence for them of what you propose unless it happened to be faster than they wanted to move. But depending on that that we set here.

But otherwise those would be not affected. So in terms of the whole population there would be a negative effect on those people that were required to move faster than they otherwise would have to, right?

MR. STOVER: Well, you know, it really does depend on that business decision. You know, I know the aluminum manufacturers in the State of California who sell in the State of California are going to want to move really quickly to the new procedure. The vinyl and wood guys may not be motivated to do that, which is going to, you know, NFRC is about fair, accurate, comparable ratings. And now, all of a sudden, a consumer or anybody who's buying a product, and maybe the code officials are not going to be all freaked out as long as it meets the standard.

But the guys that are out there making

buying decisions that says, okay, this is what I want, they're going to be comparing an old label to a new label, an old value to a new value on a day-to-day basis. And is that right? Or is that confusing?

And, you know, it's a difficult deal. It could be a cost to the manufacturers. I'm not sure. You know, it depends on how they decide, and what they decide to do with their business.

Maybe it needs to be explored more; maybe it doesn't. I know that when in '97 we did the transition there were still a lot of complaints by a lot of people about how we did the transition. So.

PRESIDING MEMBER PERNELL: Did we do it the same way that's being proposed now?

SPEAKER: No.

MS. SHAPIRO: No.

MR. BENNEY: We had a drop dead date.

PRESIDING MEMBER PERNELL: We have some room at the table so you guys won't have to keep getting up backwards and forth. Why don't you join us, Jim.

MS. SHAPIRO: And Ray.

PRESIDING MEMBER PERNELL: And Ray.

MR. BENNEY: Jim Benney. Actually Ken could probably speak to this better because he was also involved, we were both on the board. In '97 there was a drop dead date --

MS. SHAPIRO: Right.

MR. BENNEY: -- that was required. And it was very difficult for manufacturers. And I think that's why we're providing more leeway at this time is because of the hue and cry from 1997.

MS. SHAPIRO: What Marvin is proposing now, that's my memory of it. Ray.

MR. BJERRUM: I was at a meeting with NFRC and Western Region AAMA, we had a meeting with Scott Matthews over this because it was unfavorable to aluminum in '97. And I was complaining because the fact that we had brochures out there with certain numbers on them that were going into MICROPAS program that are being burned onto the blueprints and there was no way that if we were going to have to raise our window from a 7.2 to 7.4 or something it caused a problem.

So the Commission actually let both go on, because the NFRC at that point had said you got to go here and there. And then the Commission said, fine, let them both ride out until people go

through their recertification process.

But I'd like to point out something about how this works on this labeling issue because like with Merzon we sell direct to the major builders and we need to get numbers to the calculation people, the CABEC type people, or the HVAC people.

And my fear, to point out to the Commission, is that if I went to Ken Nittler as the WestLab and got my window done first, and I have a U value that is favorable to Merzon at an expense, like I pointed out in the -- it's going to be extra expense.

But then do I give that to a Mike Hodgson of Consol or a Donald P. Dick in Fresno and say, now tell the builders they can calculate at this, because if the house comes into production on April 1st when NFRC says I can put that label on there, then I have an advantage over people that haven't done it, if we chose to do it.

And that would be a matter whether I can get through WestLab, but I can't put the window -- the label, I'm not certified to put the label on the window until April 1st by NFRC rules. But I could have the number on the street, and have an

advantage over other window companies.

MR. PENNINGTON: I don't understand the point.

MS. SHAPIRO: Couldn't they do that, too?

MR. BJERRUM: Well, once I know what the U value -- say our U value is going to be a 6.7 from the 7.4 --

MR. PENNINGTON: We're going through a rulemaking to make this change, so there's an effective date that would be associated with this rulemaking. So you couldn't do what you suggested to --

MR. BJERRUM: You would have to then, in this rulemaking you'd have to tell the CABEC people, anybody that has a MICROPAS program in their possession, they cannot calculate until April 1st.

MR. PENNINGTON: Right.

MR. BJERRUM: And how would they know the different -- what U value would they know, that you're giving them a U value, say that's our U value. How would they verify that, the 7.4 that Merzon had before April 1st is now a 6.7 after April 1st?

MR. PENNINGTON: Through NFRC certification.

MR. NITTLER: Well, what Ray's describing, I believe is probably true, that there will be consultants and the builders they work for trying to take advantage of the better performing products you get with the new ratings.

The piece of the argument that I don't know, I don't know that we can do any better, basically draw a line in the sand. Pick any date you want. The exact same thing he's describing is going to happen.

At some point enterprising consultants and builders are going to recognize hey, the product coming through the pipeline is going to have a better rating, and they're going to want to take advantage of it.

MS. SHAPIRO: Um-hum.

MR. NITTLER: And so whether it's April 1st or July 1st or December 31st, you're going to have the same effect.

Now, one other aspect from talking to --

PRESIDING MEMBER PERNELL: That opportunity will be available to everyone.

MR. NITTLER: Right. I think part of

what Ray has at least told me privately is so a second issue then is as a business decision as a manufacturer he wants those -- he decides that he'd like to go for the new ratings. And then the question is, is there enough laboratory capacity within the NFRC world to provide those ratings to everybody that wants to come.

And that's a pretty good question. I think to a large extent the answer is yes, there's probably enough lab capacity if people start scheduling and preparing.

I think inevitably what happens, though, is people don't respond until the deadline's looming, so the people tat decide this March 31st are definitely going to have a problem. The people that decide sooner to act can be accommodated, I believe, with the laboratory structure we have.

PRESIDING MEMBER PERNELL: All right. Anyone else?

MR. PENNINGTON: Marvin, you had mentioned a concern about cost effectiveness, and I didn't understand your concern. Could you elaborate on that?

MR. STOVER: Well, you know, I know that

when the CEC went through this originally back when NFRC was formed, and it first went into Title 24 there was a lot of math that was worked through to make sure that you were getting the energy savings that you said based on the cost of the windows, which interpreted into the cost of the house.

You know, when I read what this hearing was about and it reflected on minor changes, I said, okay, well, has the math been done again, you know, has the staff from CEC crunched all the numbers over again to say, okay, that that's not true. Or there is no effect. Or it's a better advantage or worse advantage. You know, are there cost increases or decreases that should be accounted for in the model.

And if that's been done, I'm happy. If it hasn't been done, then my recommendation is that the CEC do that to make sure that there isn't an effect, adverse or positive. If it is positive, you need to know that. If it's negative, you definitely need to know that before this goes into effect.

MR. PENNINGTON: Generally the Energy Commission doesn't re-do cost effectiveness

analysis whenever there's something that happens in the marketplace to change the cost of a product, or, you know, something like that.

The overall statutory requirement that the Commission has is that the standards be cost effective in their entirety when compared to historic practice. And that's the legal restriction.

And the cost effectiveness of the standards against that criteria is there's no question whatsoever about the cost effectiveness.

Will this change the cost effectiveness sort of on the margin between competing measures? Maybe. That's largely an issue that is up to the marketplace to decide. You know, this generally comes down to, in terms of compliance, when a builder is choosing among complying products, can one feature accomplish a greater energy benefit in the performance standards for its cost than another feature.

And so largely that decisionmaking is done in sort of, you know, in the fields at the time that the builder is making the decision.

I think in general we're just trying to true up to a new test procedure here. And the

implications are relatively small, with probably the most significant one being the U factor for the unbroken metal windows.

And so at this point we're not planning to get into doing some revisiting of cost effectiveness analysis. In the future it would be expected that we would want to maybe adjust the U factors, or the SHGCs of our basecase and take that account into account in future considerations of changes to the standards. We're not proposing to do that in this rulemaking proceeding.

I mean it really would come into play primarily if we were considering a change to the window basis of the standards, that would be where it would be most fundamental. And we're not proposing to do that either in this rulemaking proceeding or in the 2005 building standards proceeding.

MR. STOVER: Don't you look at the cost of the building or the improvements versus the savings. And if the costs -- if one of the portions of the math changes wouldn't you have to look at that over again? And that's what I'm saying. I think that you need to make sure that some component of the math didn't change.

And if it didn't change then it's minor. If it did change, it could be not minor. I guess that's, you know, I do forecasting and budgeting for our company, and believe me, if a portion of the math changes I get real excited about the model and how it may change. And what that looks like, you know, for our company.

So that's my question. If one basis or denominator or fraction of the mathematical equation changes, it needs to be looked at. My recommendation.

MR. PENNINGTON: Okay, thanks.

MR. STOVER: Thank you.

MR. PENNINGTON: Is there anyone else that would like to speak? I'm sorry, Ken, you were next, actually.

MR. NITTLER: Thank you. I'm Ken Nittler from Enercomp. You know me from building standards activities, but I also operate a business called WestLab that's an NFRC-accredited laboratory. And we count many of these folks from the fenestration industry as customers in that business.

I want to tell you the short version here is that I do support this rulemaking. I do

have one very important change that I'd like to propose, and that has to do with which standards are referenced.

We just had a discussion a few moments ago about this transition period between the existing NFRC ratings and the new ones. And I think our standards should reflect that.

And every place in the draft or the express terms that were published where it crossed out, for instance, the 1997 edition, and then just referenced the new one, I really think it would be correct to say 1997 or the 2001 edition.

And, you know, understand that we're working towards new building standards here, as well. I don't think we need to handcuff the ability of a manufacturer to use the existing rating in our standard for as long as their certification period is valid.

We did language like this in the 1998 standards that referenced both NFRC 1991 and NFRC 1997. So we've done it before. And it's pretty much just drop an "or", remove the strikeout of the year, and I think that is a very important change that we should make sure we do.

PRESIDING MEMBER PERNELL: Would that

just -- off-the-cuff comment, if you made that change and didn't put an end date on the '97, does that then send a message that you have two different standards out there?

MR. NITTLER: You see, my idea of this rulemaking, the point was to say that when you look at the big picture and you look at national needs and EnergyStar programs and other states with other codes, that we need a way to provide a transition for manufacturers to go from current ratings to the new ratings.

PRESIDING MEMBER PERNELL: Right, understand.

MR. NITTLER: And we don't want to, for those manufacturers that make a business decision that says the current ratings are adequate for the market they serve, let's let them use the ratings for their full value.

Now within the NFRC program that is a date certain. The most they could possibly last would be four years. As a practical matter, you know, most of them are products are spread out, they're mid-cycle, so maybe the average timeframe is two years.

MS. SHAPIRO: But, Ken, I don't

understand if we put into the standards that you could use the '97 or the 2001, why couldn't someone -- we would have to make a change again later.

MR. NITTLER: No. NFRC will no -- after a certain timeframe that Jim Benney had a slide up there, was it April 1, 2004?

MS. SHAPIRO: Four, yeah, yeah.

MR. NITTLER: NFRC will no longer certify new products to the old standard. But there still could be one that was certified say today that still has a valid 1997 rating that could last beyond that date.

MS. SHAPIRO: I think that's our intent.

MR. PENNINGTON: Yes.

MS. SHAPIRO: And maybe we need to make sure that what we are doing does that. Because what you're saying is what I understood these to do. If you had a valid label, that label was valid until it expired.

MR. PENNINGTON: I think the comment is a valid comment. I think what's proposed here in draft here is not clear enough.

(Parties speaking simultaneously.)

PRESIDING MEMBER PERNELL: What we want

to do, as long as everybody got the concept, what we want to do, from the Committee's standpoint, is be as clear as possible when you're dealing with, you know, folks in the field and across the country. I'm assuming that you want to be as clear as possible so that there won't be any question or ambiguity there.

MR. RYGG: Quick comment. Tony Rygg of the Commission Staff. Recognize the difficulty that Ken has pointed out here, and I have draft 15-day language to address it, explicitly or with great clarity, recognizing NFRC implementation schedule.

The second small subtlety you can look for in 15-day language, and that is moving the actual site of the document from the reference section to the definition section. I understand from our attorneys that the reference section is not a binding part of the regulation. So we'll move it up to where it is a binding part, and make it clear at the same time.

PRESIDING MEMBER PERNELL: All right.

MR. NITTLER: Couple other comments I'd like to make. I do -- this goes back to some of the questioning Bill Pennington was making

regarding the performance or how these ratings differ. And I prepared a handout that I've used in a couple different forums in the last number of months that shows some of our research, WestLab's research into what these new ratings mean.

And if I had to give a summary, Bill was asking some questions regarding, you know, what's the biggest change. Very clearly, as Christian said, the biggest change is related to the introduction of this radiation model.

The average sort of values that I'm thinking are appropriate here is that aluminum U factors are dropping 12 percent. This table also has solar heat gain numbers. The solar heat gain coefficient --

MS. SHAPIRO: Could we have copies, too, please?

MR. NITTLER: The solar heat gain coefficient on aluminum-frame products is also going down. And the average that I find most credible is 6 percent, minus 6 percent.

What's a little bit tough to describe is our current standard has five different U factors associated with windows in the prescriptive packages. There's a .75 window that has clear

glass. There's a .75 U factor window that has low solar low E.

And the reality is that real products, when you buy a window you get one product that has both U factor and solar heat gain. You can't really decouple them the way we have in the standard.

And so these numbers, these averages that I'm suggesting to you are the averages of horizontal sliding product, which tend to have the higher U factors. The values in our packages, the .65, .75 were mostly chosen so that an entire building's worth of windows, that the sliding glass door, the picture window, the horizontal slider or vertical slider could all be used and still beat that value. So that's why I'm using the horizontal slider numbers.

The other average that is important in our market right now, vinyl products. When you look at it this way are going down 6 percent on U factor. The solar heat gain is going up marginally, around 1 percent up on that type of product.

Now, the solar heat gain on the lower conductance frame products is probably not a huge

business issue for most people because those products with a good low solar gain, low E easily beat the .4 solar heat gain numbers you find in our standard. Those products are typically down at .33, .35, .32. So it's not going to affect what I call the critical values that we find in our standard very much.

So I thought that these numbers might shed some light on what's going on.

The bottom table on the page that has two tables --

MS. SHAPIRO: Wait, just stop for a second. Let me see what it's saying --

(Pause.)

MS. SHAPIRO: Okay, go ahead.

MR. NITTLER: The bottom table on this data sheet is my best stab at taking the data that Christian was talking about and trying to load it into the same format so you could see somebody else's analysis of how these ratings are changing.

I would note that the rating on the top table, the WestLab data, is for what I'll call west coast or California style residential product. Not all the values in the bottom table are for residential product. Some of them are,

it's kind of heavier duty commercial type products.

MS. SHAPIRO: Why is this table on the bottom right-hand side say Alaska? Alaska did this comparison?

MR. NITTLER: Well, just like goes on around here during the standards development process, is the exact answer I might give you if it was after a hearing in May might be different after a hearing in July based on the input of the organization and small changes in the rules and how calculations are to be done or constants and stuff like that.

So, really what this page represents is our best stab at doing a rating that's consistent with all the rules that NFRC has published regarding these new ratings, including the new software.

MR. PENNINGTON: Rosella, this --

SPEAKER: Presented at Alaska.

MR. PENNINGTON: -- this was presented at Alaska.

MS. SHAPIRO: At Alaska, so that's just -- yeah. That's what I wanted to know. At an Alaska meeting.

MR. NITTLER: Right.

MR. PENNINGTON: Right.

MS. SHAPIRO: Got it.

PRESIDING MEMBER PERNELL: Is everybody in agreement with the table? I mean is this something that we can also put up on our website?

MR. PENNINGTON: Oh, sure.

MS. SHAPIRO: We should put it up because Ken has presented it, so it should definitely go as a --

MR. NITTLER: I can provide it electronically.

MS. SHAPIRO: Thank you very much.

MR. PENNINGTON: Maybe not as pretty a color.

MS. SHAPIRO: Yeah, maybe a bigger size, too.

PRESIDING MEMBER PERNELL: All right, Ken, I'm sorry for interrupting.

MR. NITTLER: Just a couple other comments in response to some of the other testimony. On skylights that's probably the one product where there's, you know, a significant other change that affects the ratings.

And as Christian pointed out earlier, it

is the tilt, that it's modeled at a 20-degree slope. My experience would say that the typical change is the U factor on skylights that's going to go up on the order of 20 percent.

Now, in a standards context, skylights are a tiny fraction of the fenestration product installed. So I don't think there's a significant energy impact on that one.

I guess just one final comment is as I mentioned a minute ago, you know, the transitions are a struggle. You see that around here. At NFRC, in the world that NFRC works in, as I mentioned, there are many manufacturers in many different states with many different market conditions. You know, in a perfect world NFRC and those of us that are supporting it would show up with just a landslide of data and proof and tests and samples and all kinds of things that would make the discussion of these matters easier.

But the facts are it's largely a voluntary organization; it's not always possible to come prepared with everything about how the world's going to look in the future.

I believe from working in the NFRC arena here for ten-plus years that, you know, this is

done by committee. NFRC really, if you looked at the numbers and the membership, is really dominated by manufacturers. It's probably five or six to one for our manufacturer category versus any other.

And things like changing the product size, which by the way was something I didn't personally support, was the will of the group; was the will of the window industry, if you will, that were at those meetings.

And so, you know, when you make these transitions, trying to plan for an orderly way to move from an old standard to a new one, you heard Mr. Benney describe the way NFRC did it in '97. It said, okay, everything after this date is junk. And that causes one class of manufacturer and labs and everything else to be affected. And they don't like that.

Another way is probably closer to what we're describing here, which is we're trying, for better or worse, the certification period is four years in the NFRC program. We're trying to say okay, we'll let people take the full benefit, if it's in their business interest to do so. It's something I'm a big proponent of. I think if

that's what the program's rules were on the date that somebody got certified, let's let them use the numbers.

And I don't think the labeling issue and what the building codes or building standards arena is really cares that much, with all due respect to my NFRC peers here, what label, you know, which format and how big the numbers are, stuff like that. It's not something that greatly affects the building department's checking these labels.

Thank you.

PRESIDING MEMBER PERNELL: All right.

MR. BJERRUM: I'd like to point out the same thing, follow up on what Ken said. There has not been a lot of data out there since a lot of manufacturers that aren't even aware how much this is going to change. So you're going to get a lot more as time builds up, people questioning this.

But I would like the Commission, as you're going through this rulemaking process here, you ought to take and have Ken do some projections on how budget houses would be affected by this amount of change.

I took and just kind of extrapolated

from what Ken gave us in this listing and figure that a house with aluminum windows is going to be at least a half a kBtu different, and maybe some of the stakeholders would have some questions on that as that becomes apparent.

And I don't know if Ken's done the work and tried them out at all, but that's what we found.

MR. PENNINGTON: I'm wondering if there's anyone else that would like to speak?

PRESIDING MEMBER PERNELL: Anyone else who would like to speak on this issue to the Committee?

MR. MATTESICH: Mr. Chairman, Jim Mattesich with Livingston and Mattesich. I've represented Blomberg Windows for a number of years on these issues and have appeared before you during that time.

And I don't want to repeat what Mr. Macher said. I thank you for noticing me twitch and jump up in the back of the room when you asked if there were further comments, and I didn't see Charlie jump up. But he's advocated for the company already.

I just want to say that we hope to work

with Bill and the rest of the staff on the 2005 process to make sure that this little bit of restoring some equity for aluminum windows which we think is appropriate doesn't somehow evaporate during the next go-round, with other suggested changes which might adversely unfairly impact the aluminum window industry.

Thank you for noting me, again, and that's the extent of my comments.

PRESIDING MEMBER PERNELL: Thank you; you're quite welcome. Mr. Pennington.

MR. PENNINGTON: Okay. Thanks very much. Just in terms of next steps, as Tony was saying, it looks like staff's going to have some proposed 15-day language.

And so we would -- the Commission would be obligated to consider that after the 45-day time period is over.

So the notice of proposed action, I'm not sure if I can put my hands on it right -- here we go -- proposed adoption on December 11th. We wouldn't, if we're going to pursue 15-day language we wouldn't propose adoption on December 11th. It would be two business meetings after that probably, so it would be about a month later. I'm

not sure what the business meeting calendar in early January looks like. But it would have to be at least 15 days after this.

So, we're talking --

MS. SHAPIRO: Well, not necessarily, because if the 45 days landed before December 11th, but anyway, I think we're talking early January.

MR. PENNINGTON: Right.

MS. SHAPIRO: Right.

MR. PENNINGTON: And so I'm not even sure, maybe you know that --

MS. SHAPIRO: No, we don't know --

MR. PENNINGTON: -- January 7th or 9th or somewhere in there --

MS. SHAPIRO: Yeah, I would say the first business meeting in January.

MR. PENNINGTON: -- first business meeting in January is where we would --

PRESIDING MEMBER PERNELL: Right, and then once you get back to your office and get the date, and then that would be posted, so that everyone will know; as well as the corrected adjusted dates because of the 45-day language.

MR. PENNINGTON: Right.

Okay, and that's all I had to say. Appreciate people coming and making their comments.

PRESIDING MEMBER PERNELL: All right, let me just close out by saying I also appreciate people coming, and we have -- this Committee has a saying that if you don't show up we don't know you have a problem.

So don't be discouraged by showing up to these, even though this is, you know, we don't have 100 people in this room, and probably glad of that. But it's always good to be active and participate in the process. And if you don't, then, you know, it's hard to get your point across.

So we do encourage participation. And so, again, I want to thank you for coming. Mr. Pennington will have this information up on the website with the corrected dates. Looks like we will -- staff has heard a number of you, and we are having a 15-, 45-day -- what is it, 15-day --

MS. SHAPIRO: We're doing 45-day now, and at the end of that 45-day, --

PRESIDING MEMBER PERNELL: We're going to do a 15-day --

MS. SHAPIRO: -- 15-day --

PRESIDING MEMBER PERNELL: -- so that -- and a lot of that is incorporating some of these suggestions that you have made. So we do appreciate that and with your involvement we will get something out to the industry that everybody might not be happy with, but certainly everyone can live with.

Thank you, again.

(Whereupon, at 11:50 a.m., the hearing was adjourned.)

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Hearing; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said hearing, nor in any way interested in outcome of said hearing.

IN WITNESS WHEREOF, I have hereunto set my hand this 27th day of November, 2002.